

*CLAIM AMENDMENTS*

1. (Original) Modified sarcosine oxidase which is a protein converted by adding, deleting, inserting or substituting at least one amino acid in an amino acid sequence which constitutes a protein having a sarcosine oxidase activity, characterized by having the sarcosine oxidase activity and having improved stability in a liquid compared one before conversion.
2. (Canceled)
3. (Original) The modified sarcosine oxidase according to claim 1 wherein the protein having the sarcosine oxidase activity has homology of at least 50% or more to an amino acid sequence of SEQ ID NO:1.
4. (Canceled)
5. (Original) The modified sarcosine oxidase according to claim 1 wherein the protein having the sarcosine oxidase activity has the amino acid sequence of SEQ ID NO:1.
6. (Original) The modified sarcosine oxidase according to claim 1 characterized in that at least one amino acid in a region corresponding to positions 155 to 250 in the amino acid sequence of SEQ ID NO:1 is substituted with other amino acid.
7. (Original) The modified sarcosine oxidase according to claim 1 characterized in that at least one amino acid in a region corresponding to positions 82 to 92 or 354 to 366 in the amino acid sequence of SEQ ID NO:1 is substituted with other amino acid.
8. (Original) The modified sarcosine oxidase according to claim 1 characterized in that at least one amino acid selected from the group consisting of a region corresponding to positions 89, 155, 166, 204, 213, 233, 240, 250 and 364 in the amino acid sequence of SEQ ID NO:1 is substituted with other amino acid.
9. (Original) The modified sarcosine oxidase according to claim 1 characterized in that lysine at position 89 is substituted with arginine in the amino acid sequence of SEQ ID NO:1.

10. (Original) The modified sarcosine oxidase according to claim 1 characterized in that cysteine at position 155 is substituted with isoleucine in the amino acid sequence of SEQ ID NO:1.

11. (Original) The modified sarcosine oxidase according to claim 1 characterized in that asparagine at position 166 is substituted with lysine in the amino acid sequence of SEQ ID NO:1.

12. (Original) The modified sarcosine oxidase according to claim 1 characterized in that methionine at position 204 is substituted with alanine in the amino acid sequence of SEQ ID NO:1.

13. (Original) The modified sarcosine oxidase according to claim 1 characterized in that serine at position 213 is substituted with proline in the amino acid sequence of SEQ ID NO:1.

14. (Original) The modified sarcosine oxidase according to claim 1 characterized in that cysteine at position 233 is substituted with serine in the amino acid sequence of SEQ ID NO:1.

15. (Original) The modified sarcosine oxidase according to claim 1 characterized in that asparagine at position 240 is substituted with tyrosine in the amino acid sequence of SEQ ID NO:1.

16. (Original) The modified sarcosine oxidase according to claim 1 characterized in that glutamic acid at position 250 is substituted with glutamine in the amino acid sequence of SEQ ID NO:1.

17. (Original) The modified sarcosine oxidase according to claim 1 characterized in that alanine at position 364 is substituted with valine in the amino acid sequence of SEQ ID NO:1.

18. (Original) Modified sarcosine oxidase which is a protein converted by adding, deleting, inserting or substituting at least one amino acid in an amino acid sequence which constitutes a protein having a sarcosine oxidase activity, characterized by having the sarcosine oxidase activity and having a lowered action on L-proline compared with one before conversion.

19. (Canceled)

20. (Original) The modified sarcosine oxidase according to claim 18 wherein the protein having the sarcosine oxidase activity has homology of at least 50% or more to an amino acid sequence of SEQ ID NO:1.

21. - 24. (Canceled)

25. (Original) The modified sarcosine oxidase according to claim 18 characterized in that at least one amino acid selected from the group consisting of positions 89, 94, and 322 in the amino acid sequence of SEQ ID NO:1 is substituted with other amino acid.

26. (Canceled)

27. (Original) The modified sarcosine oxidase according to claim 18 characterized in that valine at position 94 is substituted with glycine in the amino acid sequence of SEQ ID NO:1.

28. (Original) The modified sarcosine oxidase according to claim 18 characterized in that lysine at position 322 is substituted with arginine in the amino acid sequence of SEQ ID NO:1.

29. - 30. (Canceled)

31. (Original) Sarcosine oxidase having at least one property of the followings under a measurement condition at 37°C and pH 8.0:

action on L-proline: 0.7% or less based on sarcosine, and  
Km value for L-proline: 150 mM or more.

32. - 34. (Canceled)

35. (Currently Amended) A gene encoding the modified sarcosine oxidase according to ~~any one of claims 1 to 17 and 18 to 30~~ claim 1.

36. - 41. (Canceled)

42. (New) A gene encoding the modified sarcosine oxidase according to claim 18.